The Journal

OF THE

Jamaica Agricultural Society.

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BOARD OF MANAGEMENT.

THE usual monthly meeting of the Board of Management of the Jamaica Agricultural Society was held at the office of the Society on Tuesday, 20th April, 1909, at 11.40 a.m. Present: His Excellency, Sir Sydney Olivier, K.C.M.G., presiding, the Hons. L. J. Bertram, Dr. Pringle, R. P. Simmonds, His Lordship Bishop Collins, Messrs. D. Campbell, R. Craig, A. W. Douet, Conrad Watson, J. R. Williams, and the Secretary, Jno. Barclay.

Apologies for absence were submitted from His Grace the Archbishop, Hon. Geo. McGrath, Messrs. Ronaldson, Fursdon, and Shore.

The Secretary said that Mr. Shore had requested him to put his letter to the Board. Mr. Shore protested against the alteration of the dates of the meeting, as those who lived far away had to fix their engagements far ahead.

The President explained that alteration of the fixed date was not often necessary, but this time an important show fell on the same date as the Board meeting, and another one the week after, and he had suggested fixing the meeting on Tuesday, so that members of the Board who were members of the Legislative Council could attend.

The Secretary stated that all the members of the Board had been communicated with, and had all agreed to the alteration of the date for this month, except Mr. Shore.

The meeting suggested to the Secretary that he should, whenever possible, ask shows to keep off the fixed date of the Board meeting.

The minutes of the previous meeting were read and confirmed.

Re Conditions in South Manchester. Matters arising out of the previous minutes. The Secretary presented the following report:

The Staple and Minor Products Committee and the Instructors Committee to whom was referred the inquiry into the conditions in South Manchester, have considered the matter and now beg to report:—

1. That they are unable to recommend any new commercial or agricultural products to small settlers in South Manchester as a panacea, but consider that much greater effort might be made to obviate the effects of drought in certain seasons and in certain years, by increased attention to quick-growing and drought-resisting grain crops, like varieties of

peas and beans, corn, and especially guinea corn, all of which can be stored over seasons, as is done in the dry districts of Trelawny ; also cassava which can be kept over as farine : and tobacco, for which there is always an excellent demand in other districts. They consider every endeavour should be made to encourage the people to make the most of the crops now growing there (a) by improving their methods of cultivation and ways of harvesting and marketing their crops ; (b) by keeping live stock suitable to their means and conditions—where horsekind and cows cannot be kept through lack of purchasing power or feeding, improved breeds of goats and rabbits might be kept with profit; (c) by the careful use of manure saved from such stock by penning and feeding.

That the people in the districts near the seaboard might draw upon the sea to a larger extent at all times, but all the more in times of drought, for supplies of fish.

The Committee are alive to the fact that the more widespread the cultivation of tobacco, cassava, and other crops liable to attacks of insect pests, becomes, the greater the need is for the services of an entomologist.

2. That the Instructor should not cease to encourage the people to improve their coffee, the staple crop of the district, and should use every endeavour to stimulate them to make their lands under this staple crop fully productive—which it is very far from being at present—by improved methods of cultivation, pruning, mulching, and manuring, and by co-operation for sale of products in every possible way.

3. That as cassava is a very safe drought-resisting crop for dry districts, with the double advantage of being a food crop as well as being suitable for export in some manufactured form, no opportunity should be lost to encourage incoming capital to establish an export trade in cassava products, for which the Committee understand there are hopeful prospects at present. If it could be established on a large scale, it would be in a great measure a solution of the difficulty of finding a good ready-money crop for these dry districts.

3a. That as a good water supply is of the greatest importance on holdings, not only for ordinary household purposes and for live stock, but in the proper preparation of coffee for market, for the preparation of cassava, and for the cultivation of gardens, the building of more tanks and larger tanks on holdings should be advocated and encouraged.

4. That they recommend demonstrations or experiments to be carried out on cultivators' own holdings, under the Agricultural Instructor for the district, that a sum of money for such purpose might be asked from the Government, *i.e.*, to enable the Instructor to take over, on the owner's offer, a few neglected cultivations free of rent, for a period, say, of one year, work them up to show results by his methods, and pay for the work to be done, the owners acting as care-takers and getting the produce. A sum of £25 might enable about 10 of such plots to be taken up in different parts of the district for one year. Longer experiments and more plots involving a larger sum of money would be still more effective. The Committee do not recommend central experiment stations.

5. That while it does not always pay to take oranges to far buying centres from South Manchester after the middle of October, yet as the orange trees are already established all over the district, experiments might be directed towards inducing the trees to fruit earlier when there is a demand and larger price (in somewhat the same way as bananas are timed) on the same lines successfully carried through on several private groves. No expense will be involved in this, only a small outlay of time and effort on the part of the owners of orange trees.

6. That the Essential Oil Industry has been established by some of the larger landowners in Manchester, and this may provide some labour

for women, (in St. Ann and other parishes some have been earning over 10/- a week in extracting the oil of orange) as well as some return from the fruit.

7. That Milk River does not appear to be practicable as a shipping port for perishable articles of produce like fruit; and no trade in oranges is likely to be carried on from there because of natural difficulties. The trade previously carried on for two years there would soon have ceased to exist whether the railway agreement had been made or not.

8. That they are unable to recommend any legislation for the compulsory sale of large properties in small lots, amongst other reasons not being satisfied (a) that lands cannot be secured, if not in South Manchester, by migration to other parishes of the island, (b) that the most is being made of land at present available for those crying out for more land.

9. That migration of labourers to other parishes in the island should be encouraged through the Immigration Department. The Committee is aware that the transfer of labourers in St. Mary and Portland from St. Elizabeth and other parishes has not been entirely successful, but thinks that a fresh attempt should be made to devise suitable arrangements, and recommends that these points be referred to a Committee.

10. That the emigration of labourers should not be discouraged to Port Limon and Colon, and other places where labourers have an opportunity to earn good wages, and return afterwards to their families and their holdings, and with a view to this the Committee would recommend the revision of present restrictions in the way of emigration.

11. That to encourage the development of staple or permanent crops, on large properties, and at the same time increase the amount of arable land available for cultivation by small settlers, special legislation might be tried here on the lines of the Trinidad Agricultural Contracts *Ordinance of 1889, which is said to have greatly extended cocoa cultivation* in Trinidad, and might be used for many crops here. This system might be applied in suitable places in the planting of limes, sisal hemp, coffee and cocoa, as it is sometimes applied in the planting of guinea grass in Jamaica.

12. That an effort should be made to make lease-hold more popular than it is between landowners and tenants in place of the system of annual tenancy—at present legal costs involved in the preparation of leases are a deterrent in this direction, and the Committee recommend the Government to reduce the stamp duty on leases and provide cheap forms of lease for sale as forms of conveyance are now sold. Simplification of the means of enforcing penalties for breach of contract is also desirable.

13. That it is desirable to appoint a small commission to inquire into and report on the application of these recommendations and how they might permanently affect conditions in South Manchester That this commission should in part at least consist of practical agriculturists familiar with the district concerned.

His Excellency said that since the Board had referred this question of inquiring into the conditions of South Manchester to the Staple and Minor Products Committee, a further step had been taken in the Legislative Council on the motion of the hon. member for Manchester, when a commission was appointed to enquire more generally into the conditions of the people in South Manchester. He did not want any of the good work done by this Committee suspended on account of the appointment of that larger commission. He would like the Board to consider whether they could not take

any steps to carry out the very practical suggestions of the Committee and in increasing the activities of their own Instructors and the work of the Society in those districts in the matter of the experimental plots. That was a matter in which they should not relax their efforts. They had been going on for some time teaching the people and shewing them the results of improved methods of cultivation and also the results of building better tanks and having their own water supply. He felt strongly on those two points, and he wanted the Agricultural Society to maintain its position on the matter. For several years past they had been making special efforts in Southern Manchester and Southern St. Elizabeth in this matter, and with considerable success. He thought they should do what they could in carrying out the recommendations of the Committee and leave the political questions in paragraphs Nos. 9, 10, 11 and 12, to be threshed out by the Legislative Council.

The report was unanimously adopted, and on the motion of Dr. Pringle, seconded by Mr. Williams, the sum of £25 was allocated for the carrying through of the experiments mentioned in numbers (4) and (5).

The Secretary was instructed to take the necessary steps to have the experiments duly carried through.

(a) Re Government Veterinary Surgeon. The Secretary submitted C. S. O.'s letter, No. 3738 4517, 15th April, 1909.

1. I am directed by the Governor to acknowledge the receipt of your letter of the 2nd inst., and to inform you that Mr. E. L. Tavares was relieved of his appointment as a commissioner to take steps to prevent the dissemination of the recent disease among horsekind by a letter dated the 2nd inst.

2. I am also to inform you that His Excellency has appointed Mr. E. Linton to be Government Inspector of Stock on the terms on which the office has hitherto been held, viz., the remuneration to be the fees paid by the importers of stock under the Cattle Quarantine Laws, and the appointment to be held subject to the Governor's pleasure.

3. Mr. Tavares was appointed on the 11th May, 1907, to act temporarily as Government Inspector, on the understanding that the appointment was liable to termination at any time without notice and he has now been informed that this acting appointment will terminate on the day after the date of this letter, and thereupon Mr. Linton's appointment will take effect.

(b) Re Cotton Industry. The Secretary submitted the following memorandum :—

The special Committee appointed to inquire into the prospects of the cotton industry in Jamaica, met on Wednesday, 17th February, at Headquarter House, at 1 o'clock. Present :—His Grace the Archbishop, presiding, *the Hon. Director of Agriculture, Messrs. H. T. Ronaldson,* Conrad Watson, and the Secretary. Mr. T. H. Sharp and J. Shore were absent.

All the papers on the subject had previously been circulated.

A report was drawn up as agreed to by the majority of the Committee present, and circulated to all the members of the committee. Three members of the Co

Agriculture, Mr. Sharp and Mr. Shore, and there are three in favour of it in its entirety—the Archbishop, Mr. Ronaldson and Mr. Watson.

I suggest that as the Board has already allocated £10 to carry through small experiments in cotton in St. Elizabeth and Trelawny, and the British Cotton Growing Association have donated £15, we can carry through these experiments beginning in August, so as to satisfy ourselves what may or may not be done by small settlers in cotton in these parts.—JNO. BARCLAY, Secretary.

(c) Re Ratooning Cotton. The Secretary presented extract of letter from Mr. Arthur Hutton, Chairman of the British Cotton Growing Association, to Mr. J. R. Williams, regarding ratooning cotton, which was directed to be printed in the JOURNAL for the information of those interested.

(d) The Secretary submitted letter from Mr. Roland Gillespy, Falmouth, with reference to the hand cotton gin which he had on loan, stating that he had at his own expense, furnished the gin with a new roller, but that he had omitted to advise the Secretary that he was doing so, and asking if he would still be allowed the use of the gin, as he had been requested to return it to Mr. Shore.

The Secretary said that Mr. Gillespy might have the loan of the gin as he had put in a new roller, and as they would be carrying through cotton experiments in Lower Trelawny, they would have the use of the gin for their cotton. As they had a gin on hand at the office with a new roller, this could be sent to Mr. Shore instead. This was agreed to.

Letters from C. S. O. re Grant. *Letter No. 3343/4297/09, 3rd April, 1909.*

Sir,—With reference to your letter of the 29th ultimo, submitting for His Excellency's information a statement of the estimates of the Jamaica Agricultural Society for the financial year 1909-10, I am directed by the Governor to say, for the information of the Board of Management, that the Legislative Council has voted £500 as an addition to the grant to the Society of £1,500 voted last year, being £100 in lieu of the provision for the Board of Agriculture (struck off the estimates) and £400 for Agricultural Instruction, in addition to £100 added to the estimates of general expenditure for the expense of cultivation and distribution of chocolate, under an Instructor proposed to be stationed at Bath.

With reference to the letter from this office of the 3rd inst., I am directed by the Governor to inform you that the Treasurer has been authorized to make payments of the grant to the Agricultural Society, and the amount provided for travelling Instructors under the Elder Demster contract at the commencement of each quarter without special authority.

2. I am to say, in elaboration of my letter above referred to, that of the addition of £500 to the vote for the Society this year, £100 is for the general administrative purposes of the Society in lieu of the £96 formerly provided for the Board of Agriculture, and £400 of the amount is intended to provide for additional Instructors, viz., one at Bath (in connection with the £100 provided on the estimates of the Agricultural Department for the propagation of cocoa at that station) and £250 for expenditure as the Board of Management may decide.

The President said that as it would be seen, there were funds available, he thought that the Board would agree that the £50 the

Secretary received from the Board of Agriculture, abolished as from March, 31st, should be continued, as part of his salary as Secretary of the Society. This was unanimously agreed to.

The Secretary submitted the following report of the Instructors Committee :—

A meeting of the Instructors' Committee was held on Monday, 19th instant at 4 o'clock. Present : Hon. Dr. Pringle, presiding, Messrs. R. Craig, E. A. H. Haggart, J. R. Williams and the Secretary.

I beg to report that they considered papers regarding the appointment of two new Instructors and containing suggestions for re-arrangement of districts, submitted by the Director of Agriculture, who was unfortunately not present at the meeting, having to be at Mandeville to act as Chairman of the Committee on Conditions in South Manchester. The Committee find the papers were only received by the Secretary on the 8th April, and so there was not time to circulate to all the members of the Committee before the meeting.

They recommend that the final consideration of the matter be postponed for a month until all the Committee have seen the papers, and that when it is settled how the funds available can be allocated, two new Instructors might be advertised for.

The following letters were submitted from the C. S. O. :—

(a) Re Preliminary Reports of Professor Newstead and Dr. Prout. No. 3076/S.S. 71/09, 26th March, 1909.

I am directed by the Governor to forward herewith, for the information of the Jamaica Agricultural Society, copies of preliminary reports by Mr. Robert Newstead and Dr. W. T. Prout with regard to their recent scientific expedition to this island.—ROBT. JOHNSTONE, Asst. Colonial Secretary.

Extracts from these were directed to be published in the JOURNAL.

(b) Re Remission of Duty on Goats and Rabbits. No. 3545/3998/09, 10th April, 1909.

Sir,—With reference to my letter No. 10144-10406 of the 6th October last, I am directed by the Governor to transmit to you the accompanying copy for the resolution passed by the Legislative Council on the 25th ultimo, approving of the admission duty free, of pure-bred goats and rabbits imported for breeding purposes from British possessions, India and the United States of America.—LOUIS J. BERTRAM, Acting Colonial Secretary.

The Acting Colonial Secretary moved the following resolution :

That whereas a motion to amend the Tariff to enable pure-bred horses, cattle, sheep and pigs imported from British possessions, India and the United States of America, to be admitted free of import duty, was agreed to by this Council on the 15th day of January, 1908, it is now considered desirable that such amendment be extended to pure-bred goats and rabbits imported under similar conditions.

Motion seconded by the Attorney General ; agreed to.

(c) Re Wireless No. 3781/2835, 16th April, 1909.

has been introduced into the Legislative Council, a copy of which is enclosed, providing for the establishment of a wireless telegraph station by the Direct West India Cable Company.—ROBT. JOHNSTONE, Assistant Colonial Secretary.

The following letters from the agent of the Direct Line were submitted :—

(a) Re Refrigerating Machinery. For the information of your Society, I herewith send you a renewal certificate for the refrigerating machinery on board the s. s. *Port Royal*. The machinery is examined from time to time by Lloyds, and if found satisfactory, a certificate, as per enclosed, is granted, and with such a certificate there can be no question that the insulated space is in every way up to the requirement of the contract.—(Sgd.) E. A. H. HAGGART.

(b) Re Empty Space.

With reference to conversation regarding the carriage of cased fruit in the insulated portion of the steamers of this service, I give you herewith a note of the empty space, which unfortunately we had to sail with, in the steamers from 8th October, 1908, until 14th January, 1909, and which meant a heavy loss to us. In the empty space referred to we could have accommodated something like 40,000 bunches of bananas spread over the various ships, so that you can realize the heavy loss sustained.

Port Kingston, 8th October, 1908, empty space 445 tons; *Port Henderson*, 22nd October, 186 tons; *Port Royal*, 5th November, 146 tons; *Port Kingston*, 19th November, 378 tons; *Port Henderson*, 3rd December, 393 tons; *Port Royal*, 17th December, 229 tons; *Port Kingston*, 31st December, 794 tons; *Port Henderson*, 14th January, 1909, 418 tons, a total of 2,989 tons.

Sale of Bull. The Secretary submitted the following report: I beg to report that after consulting the Live Stock Committee, I advertised the roan bull "Henbury Favourite" for sale on Wednesday, 7th April, at 12 o'clock, in the office yard. After spirited bidding it was sold for £40. The roan bull arrived here on December 18th in wretched condition, and after being nearly a month in Mr. Tavares' stables, was sent to Hope. It was sent back here on the Monday morning before the sale in excellent condition, which clearly shows that the studmasters had not given the animal proper attention.

Even taking this money into account, the balance in favour of the bull account is only £10 10s. 7d., as the expenses of the bull "Henbury Beau" which is now at Hope, and the Bull "Desmond," which died, are all taken into account. There is also to the credit of the Live Stock premiums account, a balance of £13 8s. 3d. at the Bank of Nova Scotia Savings Department, still unused.—(Sgd.) JNO. BARCLAY, 20th April, 1909.

The manner of utilising this money for the encouragement of the live stock industry, was directed to be submitted to the Live Stock Committee.

Instructors' Reports. The Instructors' reports and itineraries and the Secretary's proposed itinerary, were submitted and directed to be circulated to the Instructors and Office Committees respectively.

Mr. Craig read extract from letter from Mr. A. N. Dixon, New Ground, St. Ann's Bay, calling attention to the prevalence of brown rot in cocoa, which he had on his place, and which he noticed to a greater degree along the Buff Bay River in Portland.

The Secretary was instructed to send a copy of this to the Instructor for Portland, and to publish it in the JOURNAL.

New Members. The following new members were elected :—Captain Hills, Kingston ; Edward Ecker, Central America ; Dumois Nipe Bay Co., New York ; Messrs. Wm. Cooper & Nephew, Berkhampstead ; Allan D. Barrow, Panama ; Amos Epelle, West Coast Africa.

The meeting adjourned until Thursday, 20th May, at 11.40 a.m.

RUBBER.

WE received an interesting Rubber Chart, issued by Lewis & Peat, 6 Mincing Lane, London, giving the fluctuations in the price of rubber from January, 1905, to December, 1908.

In January of 1905 Plantation Para started at 5/11, with Wild Para at 5/1. In May the price reached the highest point of 6/9 for plantation and 5/9 for wild. From that time the price went steadily down till June, 1907, when the price of plantation was 5/- and wild 4/8. Then it took a little jump upwards, and in the next three months went down rapidly until in March, 1908, plantation had reached the lowest figure of 3/2 and wild 2/9. It immediately jumped up again, and in the months of October and November, 1908, sold from 4/4 to 6/- for plantation, and 4/3 to 5/3 for wild. Then it settled down to the good figure of 5/4 for plantation and 5/1 for wild.

The report says it is impossible to give any specific information as to the price in the future, but the opinion is expressed that fluctuations will not be heavy for some time to come, and a continued good demand for all the rubber likely to be sent into the market at present is looked for.

We have been glad to note what was said of Castilloa as follows :—Only small shipments from plantations have come in yet—but the shipments from Ambanganga Estate in Ceylon show what can be done, and that rubber from this tree properly prepared is nearly equal in quality to ordinary Para. The improvement in preparation of small lots from Tobago is most gratifying.

Looking at the experience of Ceylon where Para is grown successfully in different kinds of soil, some not of the richest quality, from sea level up to 2.500 feet, we are not prepared to say that Para will not grow well in Jamaica ; but we think that more confidence could be reposed in Castilloa for our conditions. Castilloa is very distinctly a tree for tropical lowlands, and we do not think it would be a commercial success grown over 1,600 feet, and it will be slow of growth even at that elevation, unless there are exceptional circumstances that counteract to some extent the

OTHER LANDS—FORESTRY.

We take some notes on this subject from the *Hawaiian Forester and Agriculturist.*

The arguments apply also to Jamaica as the position of Hawaii in the Pacific Ocean, (latitude a little higher) the physical conformation of that island, the climate, the crops, are all similar to ours.

Hawaii being within the tropics, the question of water is of superlative importance. The rainfall is abundant, ranging from a few inches to several hundred inches a year according to locality, but the more abundant fall is usually distant from the land where it is most needed. The problem is that of its conservation by way of preventing it from escaping immediately to the sea in freshets, and that of transferring it to the arid lands. It has been demonstrated that land which, with an ample supply of water properly applied produces, say, ten tons of sugar to the acre, produces only four-fifths of a ton under a rainfall of 32½ inches a year. Most of the irrigated plantations have less than this amount of rainfall. One hundred and five thousand acres or about one-half of the 213,000 acres devoted to sugar production, only about one-half of which is cropped annually, is practically reclaimed arid land,—entirely *through private enterprise. The reclamation of this land has involved* an expenditure of about $15,000,000 or more than $140 per acre in initial outlay, for the construction of ditch, tunnel, flume and pipe lines, reservoirs, pumping plants, artesian and surface wells and electric plants for the generation of power for pumping plants. A single system for one group of plantations includes about 225 miles of main and lateral ditches, tunnels, etc., costing a million and a half dollars, besides wells, reservoirs and pumping plants. In one instance, electric power is generated by water on the rainy side of the island for the operation of pumps on the opposite or dry side. There are 111 pumps in operation with a capacity of 580,000,000 gallons per 24 hours. Sixty per cent. of the water used on irrigated plantations is pumped. The average lift is 191 feet, with a maximum of 550 feet. One acre requires about 5,000,000 gallons per crop or about 10,000 per day. The expense is great, but it is a necessity and it pays. The irrigated lands produce nearly twice as much as the unirrigated. Though constituting only half the total area, they produce about two-thirds of the total output of 500,000 tons of sugar.

In view of the foregoing, the preservation and extension of forests are obviously prime necessities The typical islands consist of a high central mountain with radiating ridges and valleys. From ancient times the islands have been subdivided in apple-pie fashion, the typical main division of land extending from seashore to mountain-top and comprising one or more valleys with their side ridges. Even in ancient times each valley had its own network of small ditches for purposes of irrigation. The water-sheds are short, the slopes, steep; there are few permanent springs; it must be the forests that must be relied on to hold the water for the steady supply of the streams. The relation between the forests above and the near-by arable plains or gentle slopes below, in respect of water supply is too obvious to be disputed. Before the possibilities and needs of irrigation became apparent, much wasting of the forests by cutting and through destruction by live stock was permitted with most disastrous results, as it now appears. . . . . .

Hawaii is a country essentially dependent on agriculture. The main crop is sugar cane. On more than half of the 54 plantations irrigation is essential for successful cultivation, for although the soil in the leeward districts is rich it requires water to be made commercially productive. Water is also needed on the non-irrigated plantations for the development of power for the fluming of cane. The important part that irrigation

plays in Hawaii may perhaps be made more apparent by the statement that over fifteen million dollars has been expended, wholly by private enterprise. in developing the irrigation systems that supply water to the cane fields of the irrigated plantations.

The importance of the forest is generally recognized in Hawaii, and has led to a strong public sentiment in favour of forestry. This finds expression in a Territorial Forest Service, charged with the creation and administration of forest reserves and with the prosecution of other forest work. During the past five years under a definite forest policy systematically followed, sixteen forest reserves have been set apart, with an aggregate total area of 444,116 acres. Of this area 273,912 acres, or 61 per cent., is land belonging to the Territorial Government. The other 39 per cent. is in private ownership. but for the most part the owners of the lands. fully aware of the benefits of forest protection. co-operate actively with the Territorial Government in the management of the forest reserves. . . . . . .

One year from planting the trees the following measurements were made :—

"The tallest tree in the *uncultivated* lot was 5 feet 3 inches, a Eucalyptus Botryoides, and the average height of the whole of the trees was 3 feet.

"In the *cultivated* lot the tallest tree measured 16 feet, Euc. Rudis, *the other tall ones being* : Euc. Botryoides, *15 feet* : Euc. Corynocalyx, 12 feet : Euc, Leucoxylon, 12 feet ; Euc. Paniculata, 12 feet ; Euc. Corymbosa, 6 feet.

"The best average height, and the evenest grown lot of trees was the Euc. Botryoides ; the poorest being the E. Corymbosa. The average height of the whole three-acre lot was over 10 feet. One stray (Blue Gum) Euc. Globulus, that was accidentally planted in the cultivated lot, measured 12 feet in height. This tree had exactly the same treatment the others had, which goes to show pretty well, that both Rudis and Botryoides, are faster growers than the Globulus : both these species are ranked very highly in Australia for railroad ties, and fence posts. This is well to be known, especially as the Globulus, or Blue Gum, is the Eucalyptus most commonly grown at the islands, and except for firewood, is the poorest for any purpose.

"As showing what the possibilities are of fence post production, we would call attention to figures heretofore reported, viz : The last year we cut 244 good fence posts, five to twelve inches in diameter, from 38 second growth Eucalyptus Rostrata trees, twelve years old. Some of these posts have been put in the ground plain and the balance subjected to creosote treatment by the Kahului Railroad Company. All of these posts will have the date stamped on them, and the place of use recorded in the ranch forestry book : so that their respective life in the ground can be ascertained accurately."

The foregoing results, we submit, are such as to more than warrant all plantations, especially those which use railroads and have large amounts of fencing to do, experimenting with cultivated forestry. . . . .

But the benefits of forestry do not cease with forest protection. The question of meeting the demand for wood and timber of the various classes required for local use, not to speak of the need for fuel in certain districts, becomes each year more and more pressing. It is the province of forestry to meet this demand through the introduction and establishment of trees that will in time supply the required products, be the need for posts, railroad ties, construction timber, or fuel. Then too, on the side of windbreak, shelter-belt, and incidentally of road-side and ornamental tree planting, forestry touches the life of this community at many

Let us now briefly consider planting for commercial returns, which is far and away the most important form of tree-planting in Hawaii. Every sugar plantation in the islands needs a constant supply of wood and timber. Many must provide for a supply of fuel as well. The price of all kinds of lumber, even of the ordinary rough grades, has for some years, been going steadily up. From the outlook on the mainland it is evident that a further rise is to be expected. With the increasing demand for all forms of wood and the steadily diminishing supply, the outlook cannot be otherwise. The situation to-day is that we are one year nearer the time when the pressure of a wood famine will begin keenly to be felt. The only remedy is to plant trees and to begin at once.

Practically every sugar plantation in the islands has areas of waste land that is good for no other purpose, but which will serve excellently for producing wood of the kinds specially adapted for the needs of that particular plantation.

DISEASED COCOA TREES.

We again direct attention to the article entitled "Sanitation of Cocoa orchards," published in the November Journal. It is taken from a booklet published in the Imperial Department of Agriculture in Barbados, which all those interested in cocoa-growing should purchase, (price 4d. from this office post free).

The point about pear trees and breadfruit trees having a frequent tendency to fungus diseases is an important one. Among small settlers it is usual to grow both trees with their cocoa. We have always known that pear trees among cocoa trees were inimical to the health of the cocoa. Whenever a pear tree dies—and in many districts, just those where cocoa is most grown too, where it is humid and soils are heavy, the life of the pear tree is short—its roots rot and are usually a mass of corruption, which may infect all the trees in the cultivation.

We have not observed this in the breadfruit trees here, but we take it that all rotting wood in the ground (not so much *on* the ground, is a menace to the health of cultivated trees like cocoa, coffee, and oranges (but not bananas), and old stumps should be burned out, or dug out and burned, and the spots where they were, filled in with lime. In Upper Clarendon it is a common thing to have pear and mango trees among cocoa, and root diseases are rife. The mango tree is such a powerful feeder, and its shade is so dense, that it is at all times a bad tree to grow among other crops.

* * *

I have been alarmed at the spread of the brown rot disease, and thought I was the only sufferer, until I took a ride up the Buff Bay River, and Mabiss Valley, then I knew the extent of country affected. The small settlers' plots there are generally in a condition of shocking neglect. The seeds thrown down by rats for years have been allowed to grow up until the fields present the appearance of a jungle.

An Instructor up there would find that nothing could be done until he succeeded in persuading the owner to cut down three out of four trees. His task would not be an easy one. As far as I can see the trouble begins in spots where there is insufficient drainage and sunlight, but un-

fortunately it does not stop there. When the warm weather sets in it gradually begins to disappear—to the untrained eye, until the return of the wet seasons. Mr. J. H. Hart writes fully about it in *Tropical Life* for February, 1909.—(Sgd.) A. N DIXON.

New Ground, Lime Hall P.O.

[This quotation from a letter to a member of the Board of Management, was submitted to the Board and directed to be referred to the Instructor for Portland, to call his attention to the trouble mentioned.—ED.]

SULPHUR AS A PEST REMEDY.

As several correspondents have asked us what form of sulphur should be used in the lime and sulphur wash, we take the following notes from the Cape *Agricultural Journal*:—

By way of preface, a few not unimportant points may be referred to in connection with the forms in which sulphur is met with in commerce. In its crude form, sulphur is found mixed with limestone, gypsum, etc., in the volcanic districts of Sicily. It is there separated from the ore by fusion, when the sulphur melts out, forming the article commonly called crude *brimstone*. Crude Sicilian sulphur, the raw product obtained by the fusion process at the mines, usually contains from 4 to 12 per cent. of impurities. There are over 600 mines at work, and these produce on the spot the raw article as exported from Sicily. There could scarcely be a cheaper form of sulphur, and, although capable of many employments, brimstone as imported into England cannot be used for *all* purposes—for making gunpowder, for instance—and hence it is often refined from its earthy impurities by distillation or sublimation. The vapour which arises from the heated sulphur passes over into a cold condensing chamber, where the sudden cooling causes the sulphur to deposit, like a yellow snow, in a very fine state of division.

This very finely divided sulphur is scraped out and appears upon the market as *flowers of sulphur*. When the sublimation has been going on for some days, the condensing chamber becomes so warm that the sulphur no longer condenses to the solid state as flowers, but collects at the bottom of the chamber as a liquid: this liquid sulphur is drawn into cylindrical moulds, where it solidifies into the *roll sulphur* of commerce. Roll sulphur is frequently crushed and ground, and is then sold as *flour sulphur*.

During the sublimation the impurities remain behind, and the sulphur that passes over into the condensing chamber is almost absolutely pure. It follows, therefore, from what has been said above, that as far as purity goes, flowers of sulphur and flour sulphur are equally good, but it is not always practicable to grind the roll sulphur quite as finely as the sudden cooling of its vapour may cause the flowers of sulphur to be.

As a means of distinguishing between flowers of sulphur and the fines grades of flour sulphur, it may be said that flowers invariably possess the distinct yellow colour which is so well known as

associated with sulphur : flour sulphur, when only coarsely ground, exhibits the same yellow colour, but, the more finely it is crushed, the lighter in colour it becomes. Whiteness, therefore, does not necessarily indicate impurity, but simply a very finely ground roll sulphur.

It is worth remembering that fine sulphur occupies much more space than coarse sulphur. If a certain quantity of coarsely ground sulphur just fills one bag, it is quite likely that fine flowers of sulphur may nearly, if not entirely, fill two bags of the same size. Hence it follows that the bigger the bag needed to contain a given weight of sulphur, the finer will be the sulphur.

Having said this much with regard to the principal forms of sulphur in extensive commercial use, we may pass on to brief consideration of sulphur in its three chief applications as a fungicide and insecticide.

In the preparation of the wasb, lime and sulphur are boiled in water, with or without salt, until the chemical action between the lime and the sulphur has caused the latter, either wholly, or in great part, to dissolve, producing a solution possessing the well-known insecticidal qualities. Sulphur here constitutes the chief essential, for by entering into chemical combination it forms compounds which are the active agents in destroying the scale, and the effect of the wash as an insecticide depends, therefore, very largely upon the proportion of sulphur employed in making up the mixture.

SCALE INSECTS.

A GREAT deal of the non-success of the washes and sprays recommended for scale insects, is due to the application of them at the wrong time. It is not enough to know how to make the wash and how to apply it, but we must also find out at what time the application should be made to be most effective. As a rule the time is chosen to suit the tree itself, i.e., when the fruit is off, but this may be the very time when some scale insects are almost if not absolutely impervious to any wash. For instance, in Florida it is stated that the mussel scale, which is also common here, has three broods in the year, and the white scale has also three broods hatched at different periods. It is also stated that the right time to try the wash is just after the eggs are hatched, when the scale is easily exterminated ; but if left long enough until the protecting shield has been reached, the most powerful washes will fail to penetrate the shield or disturb the insect. This explains why two men in the same district using the wash at different times may have entirely different results, one completely successful and one entirely unsuccessful, apart from the condition the trees are in.

Porus Branch is to be commended on discussing so reasonably the subject of cleaning citrus trees. It may be seen from a recent report of that Branch, that the members have been using various

home-made washes vigorously, some of which have been successful. There are a good many substances handy to every one which may be useful against scale insects as well as the lime and sulphur wash. In addition to the washes we have mentioned in the report, the juice of rotten banana stems (same as used for ticks) for instance, has been reported as being used with success; and there is the decoction of bitterwood, a tree which grows handy to most people. There is no excuse in not having substances to use in cleaning trees even where it is objeeted to outlay any money; there are useful products at hand that can be effectively used.

The Chairman said during the rainy season he took some red earth made into a paste, and put on the tree, scrubbing it in with a coarse bag, and he succeeded in destroying the insects. Mr. D. Helsey said that he tried a solution of bitterwood, lime, and kerosine oil and succeeded in killing these insects. Mr. A. Reddish stated that a grower told him that he tried a solution of about 10 quarts of lime with one pint of kerosine oil, and he got very good results in killing the scale insects. It was suggested by Mr. M. Daly that each member should try one of these experiments. Mr. Crosbie said in buying fruit he noticed that many rot from the stem, which he thinks is caused from using a dull knife. Mr. H. Bailey gave his experience in getting early fruit; he tried a solution of lime, urine and bitter wood. Mr. J. Campbell said he succeeded by rubbing the trees with a coarse brush, pruning and applying a wash of bitter wood and lime.

We commend discussions on such subjects to Branch Societies.

CLEAN WATER FOR PIGS.

It is terribly hard to get out of people's heads the idea that pigs do not require clean food or clean water like other animals, and so their food is thrown down on the dirty ground or fed in filthy vessels that are never cleaned. As for clean water, they never get it except they happen to be tethered out along a stream; they are not supposed to require clean water. They are sometimes fed on dirty slops from the kitchen, out of a kerosine pan which has never been washed since the day it was first used. What is the result? All the animals that we here use for food are fairly free of disease except the pig. If the various slaughter houses in the island were watched by any one who was particular to know whether the animals are diseased or not, and if proper officers were in charge of this part of our important meat supply, so that they could examine the flesh of these animals under the microscope, it would be found that the majority of the pigs were diseased, and it would be found also that the principal disease is worms in some form or other. Threadworms and tapeworms, in the digestive tract, and the very common thread-like worms, which inhabit the bronchial tubes, and which in the pig are *contortus filaria*, and more serious than all is the *t*. into the

flesh and muscles, which are often eaten through. There is another worm affecting pigs, called the kidney or lard worm, found in the fatty matter around the kidneys. Almost every week we get enquiries as to what to do to sick pigs—all troubles being called "hog-sick." Most of the sickness arises from worms, intestinal or kidney chiefly.

In pigs, the best means of keeping them free of these parasites, is to give clean food, clean water, and clean ground, and in addition where any of the above are suspected, to provide the pig with medicine for worm troubles. This can be easily given by keeping water from the animal till it is thirsty and then giving it tar water, taking care to use Stockholm or pine tar and not gas tar, although this, containing creolin (or Jeye's) would be effective also. but it is not so safe to use. To get this water, simply place a half-pint of Stockholm tar in a bucket of water, stir round, and every day take some of this water for the pigs to drink. Stockholm tar contains the best of worm medicines, turpentine, and the water takes up a little of this, so that as it is drawn off to be used more can be added, and the tar stirred round. This is also good for cattle and sheep, which are also largely affected by *contortus strongylus*.

ORANGES.

The various South African Governments are doing their utmost to get their citrus fruits into the market. In the Cape *Agricultural Journal*, the Natal *Agricultural Journal*, and the Transvaal *Agricultural Journal*, we read of their valiant efforts. The Cape is particularly well placed, because they have a very active commercial agent in London. Oranges from the Cape have been shipped, and the fruit in every case arrived in good condition, as it was shipped in ventilated holds, so the experiment so far as ocean transit is concerned is a success. The boxes were all carefully branded or stencilled with the name of the fruit, the quantity it contained, and the brand or initials of the shipper,

The Cape's London agent also reported on shipments from other colonies, especially on shipments from Australia, when ordinary fruit realised 8/- to 10/- per case, and navel oranges 14/- to 16/- a case. Navel oranges always fetch a higher price than any other type.

The estimated cost of a case including everything, was about 4/- per case from Cape Colony. We note that from the Transvaal the through rate, rail and steamer, to London, per box of citrus fruit, which included oranges and grape fruit, is only 4/-. At this rate they can compete with oranges from Jamaica. It costs us about 6/- to put a case of oranges in London, including everything.

The freight on oranges from California to New York is 4/6 per 100lb. box, a distance of 3000 miles.

STOCK NOTES.

JUDICIOUS GRAZING.—An abundance of feed often leads to injudicious grazing. In grazing proper there is method, and under the proper method of grazing it is fair to anticipate proper results. A good young bite of grass stands to be spoiled or grazed : spoiled when grazing is not ably supervised, and grazed fully and profitably when all the animals that are put to graze soon have their fill so long as there is a bite. All classes of cattle and horses turned ruthlessly at one time into a good fresh bite will soon damage more to the use of each class than would constitute the profit from the area being grazed if the most were made of everything.

In judicious grazing sheep should not precede cattle on a long bite, and where dairy cows are to graze or cattle are to be finished off for the butcher, their coming to pastures new should not be heralded by horses nibbling off the tops of the long grasses and trampling them also under foot.

Cattle of all descriptions like a long bite, and where a mixture of stock has to be grazed on a given area considerable thought should be exercised so as to get all that is good from the grazing. Cattle should have the first bite, and sheep and horses should come later on after the cattle have got the longest bite off, but sheep and cattle grazing together on a somewhat limited area is poor business at any stage of the grazing.

Sheep, it is true, are good walking dung carts, but their droppings are not an immediate benefit to their companions at grazing if their companions are not of a different class of live stock.

Pigs can tear off big mouthfuls of grass and deal with it where the grazing is long, but they are quite as contented picking about at a stub here and there, so the later bite is quite good enough for these, at which time they will not be fouling the immediate requirements of those cattle that produce the best results from grazing the longest bite.—*Mark Lane Express.*

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FLEAS AND TICKS ON DOGS.—Dogs are the favourite feeding ground of fleas,—although if people only know and could realise it, rats are quite as badly infected—and it is very hard to get rid of them. Washing with the strongest disinfectant does not keep fleas off, although it may kill, whatever are on the dog at the time. They remain in the cracks of floors or pavements, or in the yard, and so the animal gets immediately infested again. Floors should be washed with strong disinfectant in soapy water. We rather think, however, that kerosene is a better flea destroyer than even the coal tar derivatives ; at any rate, so far, of all the mixtures we have used, the following not only kills the fleas on dogs, and lice on fowls, but keep them off for some time :—Common soft soap 4 ozs., kerosene one teacupful, flowers of sulphur half teacupful, water one quart. Boil soap, water and sulphur together till the soap is dissolved, then

add the kerosene, and keep stirring till the emulsion is complete. Rub the dog all over with the mixture. Dilute further if necessary.

* * *

Pig-feeding Experiments.—There is probably no animal employed on the farm upon which experiments have been more frequently made with the object of ascertaining the most economical method of meat production, than the pig. In America, where pigs are bred on a very large scale, and chiefly fed upon maize, experimental feeding forms one of the chief items of research of the majority of the great State experimental farms, and we have before us one of the most important results obtained by the feeding of maize in the State of Wisconsin, for maize, being the most abundant and, as a rule, the cheapest food, the Americans study its use most persistently. In this particular case maize meal was tried against whole meal, and it was found that for every hundred pounds of gain in live-weight, 588 lbs. of whole maize, or 553 lbs. of maize meal, were required. The pigs tested weighed similar weights, about 147 lbs. each, and they made a gain of 893 lbs. on the whole grain, and 1,038 lbs. on the meal. Thus by grinding the corn, a saving of 6 per cent. was effected.

* * *

For mares or cows that will not breed, dissolve the half of a common yeast cake as found in the grocery store in half a quart of warm water. Allow it to stand for 12 hours: then strain and put in a can: place on the cover and screw it down tight. Prepare this about two days before you expect her in heat. When this occurs, place the strained yeast solution in a half gallon of hot water, and an hour before being bred inject into the vagina.

* * *

Milking Machines.—"*Probably the most extensive use of milking machines on one farm,*" says the *London Live Stock Journal*, "is that which is reported in the *Australasian* in reference to Sparrowvale Geelong Harbour Trust. There 260 cows are milked daily by means of 12 milking machines, and the manager declares, as the result of 12 months' experience, that no harm has been done to the animals. The whole are milked in a little over two hours, or, more precisely, the rate is 120 per hour. About half a dozen boys are employed to fasten on the cups and to strip the cows after the bulk of the milk has been drawn. It will be noticed that the work has to be finished by hand. It is the intention of the Board to increase the number of cows up to 700, using machines for milking them. The name of the machines used is not mentioned in the report.

* * *

Medicine Measure for Stock.—The size dose of medicine for stock varies with the age and size of the animal and construction of the stomach. Animals having compound stomachs, as cattle and sheep, require larger amounts than those with simple stomachs.

A cow will need about twice as much and a sheep one-third as much as a horse. A drop is about equal to a grain : a teaspoon holds a fluid drachm : a dessert spoonful equals two drachms : two tablespoonfuls are a fluid ounce : a wine glass holds about two fluid ounces : a teacup holds from five to eight ounces ; a tumbler holds from eight ounces to half a pint : a pint contains 20 fluid ounces.

* * *

GOATS.—Can you give me any idea as to what is the matter with some of my goats, and a remedy ?

A week or two ago I noticed small bumps on the teat of one, these grew and spread the same as yaws does on a chicken till it forms a sort of fungus and becomes sore and painful so that the kid cannot suck, now one ewe has it in the mouth, four ewes on the teats, and the kids on the mouth, so that it is spreading. I have started to wash with bluestone, but not time to see if any good result.

[This trouble is of the same nature as cowpox in cows,—yaws in fowls is chicken pox.

The *treatment* should be, to *separate* the kids *affected, and in* the evening bathe the sores on the teats and mouth with warm water, then anoint with a mixture of one part tincture of iodine to four parts vaseline. Continue treatment for three days, then simply anoint with plain castor oil. At the same time dose the full-grown goats with four ounces each of Epsom Salts dissolved in water with a teaspoonful of ground ginger added, and sweeten with "wet sugar" to make the mixture less unpalatable.

Be careful in dosing the goats as they are easily choked. See instructions for dosing goats and sheep in April JOURNAL, 1908, page 126.—ED.]

* * *

THRUSH.—Finely powdered chloride of mercury, or calomel, so called, is a very good remedy for thrush ; bnt in a bad case it will not reach all the parts where the germs abound. Hence it is advised that all diseased frog of the foot be removed with the knife the first thing ; then that the foot be soaked for a full half hour in a solution of sulphate of copper (bluestone) at a strength of an ounce to a pint of hot water. Make up a quantity of this sufficient so that it can be placed in a tub or trough, and when the horse stands in it, the whole foot will be covered. Repeat in a week. Between times daily clean the foot and dust in the calomel.

Thrush is a disease caused by the horse standing continually in muck. The hoof begins to swell badly, and then discharge matter of a dark colour between the clefts. It is an uncommon trouble here, as most of our beasts are left outside, but we have seen it. Greasy heel is a different trouble, but caused much in the same way.

* * *

ABERDEEN ANGUS CATTLE.—For the second time in the history of the Smithfield Fat Stock Club, the supreme Championship has been

carried by a lady. The first to reach that pinnacle of fame was her late Majesty Queen Victoria, who won the championship with a shorthorn heifer from her Windsor herd. The Countess Dowager of Seafield won the fat stock championship with an Aberdeen Angus heifer, and she has the additional honour of not only having bred that animal, but having bred the second prize animal also, and in addition she was also the breeder of the dam of the Aberdeen Angus heifer that won the championship at the Chicago fat stock show.

The Aberdeen Angus breed has made a clear sweep of the championship at almost all the fat stock shows this year.

TICKS.

(Copy of Letter sent by Mr. Robert Newstead to the Director of Agriculture, Jamaica).

Before leaving the Island I have to offer you my sincere thanks for the many ways in which you have assisted me during my stay here. Without your generous help I should have been greatly handicapped.

I need scarcely remind you that some of the details of my investigation have not been fully worked out owing to the short time at my disposal, and I hope that it will be convenient to you, should His Excellency the Governor sanction it, for Mr. E. J. Wortley to continue the work and report to me as results are obtained.

It is important that he should :—

1. Work out fully the life-history of the different species especially those which affect cattle and horsekind.

2. Continue the experiments with insecticides both on the stock and on captive ticks in the Laboratory.

3. Determine how long ticks of different species and at different stages of their life will live exposed under *normal* tropical conditions without access to a host.

4. Discover how soon a badly infected grass-piece becomes free of ticks, if no animals be allowed to go into it.

5. Invent if possible a non-proprietary wash.

6. Take blood films of stock suspected of having Texas fever.

7. Obtain and forward to me specimens of scale insects from different parts of the Island.

Any information bearing upon these headings that you may be pleased to forward to this School will be duly acknowledged ; and if I can assist you in the preparation of a bulletin for circulation among the agriculturists of Jamaica, it will afford me infinite pleasure.

With this I venture to send, under separate cover, my two volumes on Scale Insects, which I shall be glad if you will accept on behalf of the Agricultural Department.

Again thanking you for your valued assistance, etc.

WEST INDIAN ORCHIDS.

Mr. William Fawcett, late Director of the Botanical Department, Jamaica, and Dr. A. B. Rendle, keeper of the Botanical Department, British Museum, have in preparation a book describing the Orchids of Jamaica, which will be published by the Trustees of the British Museum. This work will be in English, written somewhat in the style of the Colonial Floras, prepared at Kew. It will be enriched by 32 plates, showing the mode of growth of most of the genera, with enlarged drawings of flowers to illustrate their structure. The plates are prepared from drawings made in Jamaica from living plants under the direction of Mr. Fawcett.

Notes will be given of the occurrence of these orchids in the other West Indian Islands and British Guiana. and it is hoped that the work will prove useful throughout this region to all who take an interest in the subject.

Specimens of orchids from any place will be gratefully received by Messrs. Fawcett & Rendle at the British Museum (Natural History), Cromwell Road, S. Kensington, London, S.W.

RATOONING COTTON.

We have received the following from Mr. J. R. Williams :—Mr. J. Arthur Hutton of the British Cotton Growing Association writes me under date March 8th : —

"Ratooning cotton is, I think, a most dangerous practice.

"There are only odd seasons when one can get any profitable results from ratooning cotton—but certainly not sufficient to justify the risks that are run of breeding innumerable pests and blights. You will remember all that was said on this question at the Conference *in Manchester, and Sir Daniel Morris spoke most strongly on* the point. There ought to be an absolute close season for cotton on every island.

"I am writing to you about this as I thought it might be worth your while taking it up with the Agricultural Society with a view to the Government having some ordinance to prevent ratooning of cotton."

In the present position of cotton cultivation in Jamaica any proposal Mr. Hutton makes may well stand over, but the advice he gives may well be noted and be borne in mind for the guidance of our Agricultural Instructors.—J. R. Williams, 6/4/09.

SOILS OF JAMAICA.

(By C. C. Moore, U.S.A. Department of Agriculture).

Ten samples of soils were collected in the three parishes : Manchester, St. Elizabeth and Clarendon.

For convenience these soils have been arranged in three groups: the red, the brown and the gray type.

In the red type group there are two samples ; one from "Blakes en," and the other from "New Forest."

In the brown type group there are five samples ; one from Yardley Chase," taken from a stony hillside, the second from the Porus Valley," the third from "Breadnut Valley," the fourth om "Cornwall," and the fifth from "Haughton."

In the gray type group there are three samples : one from New Forest," the second from "Longville," and the third from Parnassus."

All of the samples in the red and brown type groups, and the Longville" sample of the gray type group, were taken from cas-va fields.

The series of soils have been subjected to a chemical analysis ; id rather than give the technicality of this procedure, it is pro-osed to present the conclusions which the technical work has sug-ested.

As is well known, the rock formation of Jamaica is limestone, id this rock is very near the surface in some parts of the island, ; is seen by the frequent outcrop.

In the red type group, the soils existed in pockets between the mestone outcrop, and in one instance was less than a foot in depth.

In the brown type group, the depth of soil is greater, with gen-rally a distinct subsoil of the red type.

In the gray type group, the soils are very deep, resting on ravel.

The Savanna Plain illustrates the red type group, the Black iver Valley the brown type group, and the Milk River Valley the ray type group.

From the analysis it was seen that the red type group and the rown type group are practically the same in mineral composition, ie difference in colour being attributed to the lesser degree of ox-ation of the iron and the presence of organic matter in the brown pe group, owing to the depth of the soils in that group. The ils in these two groups contain about 34 o/o oxide of alluminum, id 16o/o oxide of iron ; while in the gray type group there is about 2o/o oxide of alluminum and 6o/o oxide of iron, the ratio between ie oxides of alluminum and iron being the same.

All of the soils in the red and brown type groups, contain about 5o/o of combined water, while the gray type group soils contain oout 15o/o. This combined water is only released upon heating a high temperature and will remain, even though the soils be eated to the temperature of boiling water, for an idefinite time.

The soils in the red, and the brown type groups, are practically luble in strong acid when digested for a considerable time, while ie gray type soils leave a residue, which upon examination, proved be quartz sand.

From this it is apparent that the prevailing soil type is the me in the three groups, the gray type group being a mixture of uartz sand and a red or brown type soil, in about the proportion of vo parts of the soil to three parts of quartz sand.

The red type group can be taken as illustrative of the soil type that apparently covers the island. This would be technically described as a hydrated silicate of alluminum and iron ; or what is known as a ferruginous clay, and such a soil as found in the Milk River Valley, is this same clay, which is mixed with the quartz sand that has remained from the weathering of a parent rock that was at one time on the mountain slopes.

In the process of weathering, the oxides of alluminum and iron do not leach, as do the other minerals. In consequence they remain behind, while the other minerals have gone into the sea. The quartz sand, which is an insoluble silica, and has no value as a plant food, will naturally wash down into the valleys, or until it finds a lodging place. Then the clay, which has also washed down, encases these sand grains enclosing vegetable mold, which is so held that it is practically protected from the air and resists oxidation. This makes up the soil which constitutes the gray type group, and which appears black when moist.

An examination through the microscope reveals sharp angular grains and vitrious matter, which is evidence that the soil, as illustrated in these ten samples, is the weathering of an igneous rock.

It is generally known that clay, as well as sand, possesses no value as a plant food. They are inert substances, merely the carriers of the moisture and the mineral salts which produce the plant.

As is equally well known, the plant foods are nitrogen, potash, lime magnesia and phosphoric acid : and in some of our very fertile soils these plant foods combined, will not total five per cent. of the soil.

While silica enters largely into the construction of all plants, yet the amount actually used is so small, and silica is so abundant, that it is not customary to take it into consideration in the study of the degree of soil fertility.

The largest crops will remove approximately one-hundreth of one per cent. of a soil one foot deep, so it is seen that the valuable plant food constituents of a soil may be in comparatively very small quantities, yet abundant for the plant needs for many years.

It must be understood that should a soil contain several per cent. of the plant food minerals, it does not imply that the soil is fertile. Such minerals may exist, yet be in a state of combination that holds them from the plant's use. We must, therefore, consider soils from two points ; first, the total mineral plant food it may contain, and second, the question as to how much of this existing mineral may be in a condition to be utilized by the plant.

This second form is called "available" plant food. To illustrate, a soil may contain 2% potash, and 0.02% available potash, which is an abundance for large crops. Also a soil of 2% total potash may have none in a condition available for the plant, thus being actually in need of a potash fertilizer, even though it contains 25 tons of potash per acre foot of soil. Both of these instances are of common occurrence, and account for our inability to obtain any very satisfactory information from a soils analysis. The study of

soils should, logically, be with reference to the "available" plant food, on the supposition that it is the soil's adaptability to crop production which we are seeking.

In the content of lime, the red and brown type groups contain about half of one per cent. of total lime, while the gray type group contains double the amount. This is in accord with the fact that lime salts leach, and in consequence have accumulated in the lowlands. The great purpose of lime in soils generally, appears to be that of promoting bacterial agencies. It is the culture medium for the organisms which live in the soil, and which organisms are essential to the plant's growth. While this percentage of lime means a very large quantity, yet it may not be in a condition to properly serve its purpose, whereupon it would be necessary to apply a dressing of lime that would be immediately available. This dressing may be necessary in restoring bottom lands that have become "sour," through the presence of too great a quantity of moisture, and vegetable mold.

In regard to potash, the same condition holds as to leaching, and the gray type group contains several times as much "available" potash as is found in either of the other groups. And while all of the groups appear to have potash sufficient for immediate needs, none of the soils have a store of potash, and will probably prove deficient in this very important plant food.

In the content of phosphates, the condition is reversed and the gray type group contains less than the other groups. This is in thorough accord with our knowledge that phosphates do not leach. Two of the samples in the brown type group, have nearly one per cent. of total phosphates, while the gray type group is deficient in a ratio approximating the content of clay in the two types. This, however, is not classed as "available," and it is probable the three groups are deficient in phosphates of this nature.

If the fertilization of a soil is determined, there is considered, first, the crop to be grown. Assume the classification of crops be considered as "root" crops, and "above-ground" crops. It is generally known that "root" crops are extensive feeders on potash, the average crop of this class requiring two to four times the amount of potash necessary for "above-ground" crops. This is the only very marked distinction in the fertilization of the two classes of crops, both classes requiring approximately the same amounts of phosphate and nitrogen.

As the purpose of this soil study primarily relates to the cultivation of cassava, direct reference will be made to this plant. If the large cassava roots be cleaned of the rough bark and the woody end be cut off, leaving the root as it would be sold for starch manufacture, one ton of such roots would contain 12lbs. of potash and 1½lbs. of phosphoric acid. Then the 22 ton yield per acre, which was reported at Hope Gardens, removes 264lbs. of potash and 33lbs. of phosphoric acid per acre.

When a soil is well supplied in plant food, even though not in an available condition for the crop's needs, we know the weather-

ing processes are continuous, and that the crop may be supplied with the plant food as fast as it becomes available. This accounts for a continuous yield year after year of a moderate sized crop, without the use of fertilizers : and it may be economical to dispense with fertilization. But when it is clearly apparent, as is the case with this series of soils, that no store of potash exists, it should require no argument as to the reason for returning each year to the soil the equivalent in potash of that removed.

It is generally known that potash is the principal plant food required by starchy plants, and in the fertilization of cassava it should be largely in excess, should other plant foods be also necessary.

An interesting point in the growing of cassava, is in the production of a maximum root, and a minimum top. A very fertile soil is not the best for cassava. This would lead to a heavy growth of top, and such a condition generally indicates small root development. When the soil is less fertile, it is an advantage since the element that makes the desired portion of the crop may then be supplied, while those plant foods that go to the growth of top may be left deficient.

In the application of potash salts, it should be borne in mind that such salts leach, therefore it should be made in several applications, according to the plants' needs, and these applications following a wet season rather than preceding one. The first application should be at the time of planting, since all plants begin their growth by the utilizing of potash. As to the kind of potash fertilizer, the cheapest obtainable is the best.

If phosphoric acid is to be used, this may be made in one application, since it will be retained. As to the form in which this should be applied, it is very probable the Basic Slag, or sometimes called Thomas Slag, will be desirable. These soils contain such very abnormal quantities of iron and alluminum, that a phosphate in other form would probably combine to form the unavailable iron and alluminum phosphates, and thus be withheld from the plant. The phosphoric acid in Basic Slag is less likely to enter into this combination.

This series of soils are unusual in that they contain such large quantities of water, held in a state of chemical combination. It is problematic as to whether this water can be of service to a plant. If it is, it would probably be released very slowly, and therefore, serve the purpose for slow-growing plants. The soil from the Savanna district had less than one per cent. of free water, and since it is a fact that cassava was growing in the soil and there had been no appreciable rainfall for two years, this seems to afford evidence that combined water is released, and should such be the case, the arid districts of Jamaica are not only suitable for slow-growing crops, but desirable for such a crop as cassava. On such arid soils, potash salts could be added to great advantage, as there would be no leaching and the effect would be to release the water held in chemical combination. A study of fertilization for the releasing of this water may prove

In conclusion it must be again explained, that a chemical study is but a guide to field experiments, and the foregoing suggestions have been offered for that purpose: and that in the growing of cassava, the consideration of varieties is of importance equal to that of *soil study. And of all things that are to be considered, the* intelligence of the grower stands first.

It has long been assumed that tropical countries are unlimited in their yield of bountiful crops. This may not be true. The soils of the Tropics are generally less fertile than in colder countries. Fertility may be supplied, since it is only a matter of money. But the perpetual summer cannot be purchased, therefore, of all parts of the world, they who have given in abundance this summer can best afford to study their soils and supply them with an abundance of plant food, when needed.

FOOT AND MOUTH DISEASE.

In February Journal when writing of Foot and Mouth Disease in the United States, and stating the precautions that had been taken there and in the United Kingdom, to deal with that trouble, we mentioned that there was a simple mouth trouble occurring amongst horses in Kingston, and which had before occurred in other parts of Jamaica, diagnosed as "Enzootic Stomatitis" arising from fungi or moulds on the hay or grain supplied as feed, also through certain forms of watery vegetation as young guinea grass, and that it could also be caused from dosing with irritating medicines continually. The specific for this was simply to wash the mouth with chlorate of potash dissolved in water. The cases soon recovered without much loss of condition. This disease is not infectious or contagious.

There was, however, a similar disease, but more virulent, arising from the same circumstances, also prevalent, called "Mycotic Stomatitis," and also non-infectious and not contagious. This was characterized by inflammation and ulceration of the mucous membrane of the mouth, and secondarily affecting the feet, which might become sore and swollen. The symptoms of this were: the inability of the animal to eat, suspension of rumination, frequent movements of the lips, frothing of the mouth and saliva dribbling from the mouth. Small blisters,—peculiarily small,—might be seen on the tongue, inside the mouth, or on the muzzle, which quickly became eroded and developed into active ulcers. There might also be an offensive odour from the sloughing of the fissures, and the retention of the half-chewed food. There might also be in association with these, a slight swelling and painfulness in the region of the pasterns, sometimes affecting the fore-feet and sometimes the hind feet, and occasionally the four feet. In some cases the swelling would extend above the fetlock, but not above the knee or hock. The skin around the coronet might even become fissured in neglected cases, and the thin skin in the cleft of the foot eroded and suppurated, *but without the formation of vesicles.* This trouble could be caused in the same way as the first-named disease, by the eating

of forage containing fungi or moulds. The fungi found in grasses here are likely enough to have caused it, from the fact that this trouble has occurred before here, and only has re-appeared after a long interval, suggesting the probability that certain climatic conditions are essential for the propagation of the causative fungi, because it is well known that the malady usually becomes prevalent after a hot, dry period has been followed by rain. "Mycotic Stomatitis" is not a serious disease, and recovery soon follows the removal of the cause and the application of proper remedies.

There was, however, another similar trouble among horsekind, but far more malignant in effect, and unfortunately it was also infectious and contagious, attacking the hoofs as well as the mouth. There were cases where the muzzles, jaws and hoofs sloughed off causing the animals' death. This disease was characterised by the formation of vesicles containing fluid on the coronary band of the mules and horses attacked. This disease was proved to be highly infectious and contagious among horsekind and also to man, as there occurred several cases where the men attending the sick animals suffered from blood poisoning, but fortunately not to cattle; therefore it was diagnosed as "Stomatitis Pustulosa Contagiosa," and was not the real Foot and Mouth disease which is "Aphtha Stomatitis."

The treatment for all was the same, except that the treament required to be more prolonged and persistent in the last described. The mouth should be washed out with antiseptic washes such as permanganate of potash and water. The drinking water should contain one tablespoonful of chlorate of potash, and if this water is not taken readily, a teaspoonful of chlorate of potash should be placed on the tongue of the animal. The wounds on the feet and the deep fissures should be washed out with any strong antiseptic and water and the following powder packed in :—powdered boric acid, 4ozs., powdered chalk, 4ozs., powdered alum, 2ozs. The wounds should be bandaged to keep the powder in.

It was the severe cases of Foot and Mouth trouble that occurred around Richmond that the Government had to use special measures to deal with in case the trouble should spread, otherwise the cases might have been neglected, and the disease run through all the horsekind of the parish. This would have been a great blow to St. Mary in the middle of the banana season, when all the mules are required to work their hardest to draw bananas to rail and sea. However, owing to the prompt measures taken, mule owners became alive to the serious result that might have ensued, and, as a rule, adopted the steps advocated and the treatment laid down.

Fortunately at the time of writing, this severe foot and mouth trouble has been got under. Cases of the other troubles occur sporadically. We write this to show the distinction between the three troubles, so that those whose stock take what is called "sore mouth" disease, need not be alarmed that it must of necessity be the severer form of the trouble which caused so much anxiety at Richmond.

CHICKEN CHOLERA.

ANY mysterious malady among poultry in Jamaica is termed 'Fowl Sick,' but the particular disorder, the most deadly and contagious sickness going by this name, is what is commonly termed in the North, Chicken Cholera, and which is really Enteric Fever. It mainly occurs during or immediately after long dry spells, during which the ground where the fowls congregate together becomes infected with their excretions, that is where care is not taken to make them take advantage of a wide run, or where they are confined, the ground is not dug over repeatedly so as to keep it fresh. Unfortunately, the usual place for feeding the fowls is the yard, and kitchen scraps are flung out of the kitchen so that the fowls are always hanging around, instead of spreading out and taking advantage of a free run. When heavy rains fall, the air is purified and the soil and roosting places of fowls on trees washed clean. The sickness may also occur in wet weather when the fowls are kept in a pen which becomes filthy and wet and their food is fed there. It is preventable by taking care not to fling scraps out of the kitchen and by scattering the food of the fowls far and wide, and frequently taking different places. The fowls are sharp-eyed and they will spend busy hours looking for the food if it is scattered over the grass or under trees. Where the fowls are confined the soil should be dug over bit by bit every day, and in the tropics it is best to have two pens and let the fowls occupy them three months about. This allows of a garden being planted in the one which is unoccupied and at the end of three months grass will have grown up. Quick growing vegetables can be reaped like string beans, radishes, and tomatoes, (if the young plants are ready to plant the moment the hens vacate the pens). Corn, ochros, congo peas, in three months are grown up beyond the reach of the hens, and serve the double purpose of shade and profit. With such pens the soil is always freshened and there is always green grass.

The symptoms of Cholera are: the birds begin to mope in a corner, the comb becomes dark, the droppings are thin and watery. It is very infectious, and wherever it is noticed the birds attacked should be killed and lime spread in the yard and in the fowl house, or the ground dug over. Failing the lime and if it is not practicable to dig the ground over, dry grass or bush can be spread in the yard and burned. This will disinfect it properly. Pans should be set down for the fowls to drink with a tablespoonful of Epsom Salts to each quart of water. If there are only a few fowls kept and it is practicable to dose them individually, a teaspoonful of castor oil can be administered to each fowl. No soft food should be fed—only rice and parched corn. When the corn is charred the starch in it is turned into dextrine, and the charcoal on the outside is a first-rate stomachic and antiseptic. When fowls roost on trees very little can be done to keep these places clean. If anyone takes the trouble to examine the trees where fowls have been roosting or the ground

beneath them, the cause of this disease may be often discovered, even when the other circumstances mentioned as causing this trouble do not exist. A pinch of permanganate of potash can be put in the fowls' drinking water, after they have been dosed with the epsom salts. It is a good preventive of disease to dose the fowls with epsom salts once a week, and put permanganate of potash in the water at least once a week also.

SCHOOL GARDENS.

The Education Department offered prizes in a competition for the best school gardens. It is particularly noteworthy that the highest marks in the whole competition were won by E. J. Smith, in the Top Hill district, in the very heart of what has been called "the drought-stricken district." Mr. Smith has followed the precepts laid down by the Instructor for the district. He manured heavily, using the manure as a mulch, this manure he got from his stock and he carefully saved it. We saw Mr. Smith's cultivation,—not only his cultivation but his school garden,—in the middle of the drought, when some of the people had begun to cry out starvation through drought (page 220 of JOURNAL for 1907); Mr. Smith could dig out of his ground, fine large yams, while most people around were complaining that their fields were burnt out by drought. To prove that this is not an isolated instance of what heavy mulching can do to carry cultivation through long dry spells, especially if the soil is light and porous, near to Mr. Smith is the holding of Mr. Thomas Forbes, who being much struck by Mr. Smith's success followed his example. Mr. Forbes entered for the Prize Holdings Competition and scored the highest number of marks in the third class, (holdings of 5 acres or under) and also scored the highest marks in the whole competition.

Most settlers keep small stock, but rarely do they take the trouble to tie or pen their stock where the manure can be utilized. Fowl manure is generally entirely wasted, and goat manure to the same extent—the goats are left wandering about or tied out in the bush overnight. Pigs are more utilised for penning; cows not uncommonly, and horses fairly often. Yet another form of available manure that is woefully wasted is wood ash, of which every household has some that can be saved in a kerosine pan or box, and applied to vegetables. We have often written on this subject. Manure is money, and in many countries has to be bought at a high rate and is hard to get. Its usefulness is obvious as can be noted from the rich crops that are got close around the house-yard where beasts are tied and household waste is flung, that we wonder that every man with a small piece of ground, especially where the soil is poor and dry, needs any pressing to scrape up every particle of waste matter that could be put on his crops.

There are about 75,000 acres under coffee in Costa Rica, and this area remains stationary from year to year. The average production of dry coffee per acre is from 5 to 6 cwt. The total export during 1907 was 17,328 tons, of the value of about

COMMENTS.

PRAEDIAL LARCENY.—I have given up cultivating anything, as everything I planted was stolen. I find it cheaper for my wife and myself to buy yams, etc., than attempt to grow them. I would like to plant some timber trees if I could get the seeds, but I don't want pints or quarts of one kind. The condition of the country seems hopeless and the state of the people worse than when I left it 50 years ago.—CORRESPONDENT IN MANCHESTER.

Now while deploring the stealing, which we admit to be probably worse than at any time in the island's history, and which arises from several causes, not any one cause, we must question the last statement. In many ways the condition of the people is better. We have in 10 years seen the substitution of good wooden houses with several rooms, for the generally roughly thatched one-apartment huts. We have seen the increase in boots and shoes worn, and in dressiness; good clothing is the rule now; and we have noted the great increase in travelling. Then look at our imports, the amount of shop stuff being used. While we look with some disfavour on this last, that is the using of so many things imported that we might produce at home, still it is a sign of material prosperity to some extent.

The mistake is made of considering the condition of one parish as the condition of the island. Where bananas are grown, and sugar, there is money, but in the old cattle and coffee districts, like Manchester, people have not so much money as they had formerly—at the same time it is partly a case of money being better distributed. The few had it in plenty before, now the many have better spending power than they had. It is partly because people's wants have increased and they require, and want, to spend money, that the cry is now "there is no money."

* * *

SCHOOL PRIZES.—At every show there are certain prizes offered for schools and school children collectively or individually, or both. The St. Thomas-in-the-Vale Committee for the Show at Bog Walk offered a fine Union Jack to cost 20/-, for the best six copy books from any school. We think this a fine idea. Good handwriting is an essential, and an Union Jack is a lasting memento of success. Not only can it be used for the school on all occasions, but can be loaned out for any special *fetes* in the district. At the same time each of the winning pupils ought to be rewarded. We regret to have noted that schools do not appear to have realised yet the beneficial effects of emulation amongst different schools and their pupils.

* * *

JIPPI JAPPA HATS—Already it has been stated that the jippi jappa hat market is overstocked, that it is no use teaching girls the art of making the hats because they will not find a market for them.

But this is not the case at all; the market is sometimes overstocked with hats of a style that is getting stale, and of a quality that refuses to be manipulated as the manufacturers want.

There has been for long quite an outcry about the lack of employment for girls who are not fitted for field work, and we have endeavoured to meet this cry by encouraging the establishment of hat classes so that girls may learn the art of making jippi jappa hats. Many, however, do not seem to be serious in the desire to make a fair living. We are as strong as ever in our opinion that the hat industry can provide a means of living for hundreds, and perhaps thousands of girls. The great trouble is that they will not come down to business. Business requires a certain style of hat, of a certain quality, delivered at a certain time, at a certain price, but some hat-makers are oblivious to all this. Some appear to think that if they make a hat, no matter what kind, it ought to be bought,—that seems to be the impression, and if it cannot be sold at once for a big price, then we ought to be able to sell it for them. The local market is soon overstocked, but there is a big oversea market if we provide the style and quality of hat wanted. Then again it is little use in making a hat or two. Districts should be organized, so that hats could be made steadily by girls all their time, or their spare time where they were engaged at other necessary work such as some house work. Hats must be got in these districts which have lately taken up the industry, by the score or hundred. We have sent out a sample of a new style of ladies hats wanted.

We know what we are writing about, having evidence before us of what can be done in this hat industry if makers only settle down to steady, earnest work.

SHOWS.

The following are the Shows arranged for this year :—

1.	Ulster Spring	3rd June
2.	St. Margaret's Bay	24th June
3.	St. George's Branch at Buff Bay	2nd August
4.	Hector's River (Portland)	12th ,,
5.	Glengoffe Branch is also arranging a show and probably	
6.	Porus will also hold a show.	

THE cultivation of pineapples in Singapore Island has taken larger dimensions than before, large tracts of country formerly occupied by secondary growth being now cleared and covered with pineapples. Great quantities of pines have been also brought into Singapore from the islands around.

The result of this immense crop has been that pineapples have been selling in town for 1 cent apiece, and up country at 5 for 1 cent—that is, about 20 for 1d. The tinning trade is now apparently entirely in Chinese hands. It is satisfactory to see in many of the pineapple fields cocoanuts or rubber being planted, as pineapple culture is by no means good for the land.

CORRESPONDENCE.

(Only letters with replies likely to be of general use are published here.)

I have returned to the island for about four years and have been glad to sell my oranges at 3d per box of from 13 to 16 dozen. Last year there was no sale till the St. Elizabeth people came and bought them at three dozens for a "gill." My property is entirely out of the line of trade and I was therefore glad when some parties bought my oranges at 3d. per box to "rind" them in the old coffee store this year.

Now this is what I saw, and I can only say that it was the most primitive performance possible. Several young women with their "rinders" and two women, had dirty looking bottles, one black and one clear glass, with old used corks. An old box with a hole in it for the "rinder" laid on the box, completed the outfit. The girls rolled the oranges on the rinders and some cut their fingers; after a time some improved, and succeeded fairly well in extracting the oil. The whole process seemed to me wasteful and slovenly. I may here point out that as the essential oil belongs to the turpenes, it rapidly decomposes. May I suggest a different method which I will now put before you for adoption or rejection. I propose to raise the sides of the rinders a little higher and cover them with a lid, the rinder to be so pivoted on its point as that it can be slowly rotated allowing the oranges to roll round the container like marbles in a basin or cup. A row of containers may be arranged tandem fashion on a bench with an endless tilt giving motion to the series operated by a boy at one end. A young woman could fetch fresh oranges and remove used oranges along the line. When in Canada, I had given me a piece of wire cloth with the wires projecting about a quarter of an inch free. There was a backing of cloth which could be removed. The wire cloth was used in a felt factory. I used it for polishing iron articles in my lathe. The containers could be lined with the above material, the wires being just long enough to prick the skins of the oranges, and the centrifugal force would force the oil to the sides of the vessel. Of course the motion of the containers should be just fast enough to cause the oranges to roll round, and provision should be made for the boy not being able to vary his speed much. Under the present system I can see nothing but the usual Jamaica failure, with the chronic throwing up of hands and the regular dirge "We have tried it but failed." Never for a moment do these Niobes ask themselves what were the causes of their failure. A wild rush, no thought, no method, ignorance of the first principles and the nature of the object to be gained. And then the inevitable failure, and the abuse of the Gods. M. Georges Pennetier, in his book "Le cous Matieres Premieres Organiques," says that the essential oil is pressed out in France from the fresh and dried rind, but this would necessitate peeling by hand, for I don't think that any of the apple peelers on the market would work, and I have found that even with the solid apple some knack is required. I shall be glad of your opinion of my proposed method of extraction, for secluded as I am, I think I might be able to turn my oranges to some account and keep the trees from dying out. I expect to hear that much of the oil is bad if not inferior, and there will then be an opening for the product of better methods and more care.

Newport. H. AUBREY HUSBAND.

P.S. The next thing would be to utilise the juice. When I was a child here I used to hear of "Rum Shrub," but the making seems to be a lost art. When I ask about it people here treat me as a Martian tourist. How was it made? Would there be a sale for it? How much rum per gallon of juice to preserve it?—H. A. H.

[It is a curious thing that just as we received this letter we were about to write on both the above subjects, both having been brought to our attention when we visited Manchester lately. Much of our commerce is injured by wretched carelessness in handling products, especially new products. Then the market simply shuts down upon the "Jamaica" production. We shall be glad of information as to "Rum Shrub" from any of our readers.—ED.]

* * *

I notice that there is great cry about the falling off of the Jamaica orange in the American market, and for that matter the English market is also low for this fruit. Could not some extensive use of the orange for wine making (orange juice beverage) be fostered? This may save the situation and prevent loss of such a wholesome fruit for human consumption. People do not utilise this wholesome beverage as they ought.

In Yucatan, I am told, even the labourer is provided with his pint of orange claret as a portion of his legal ration. If orange wine-making could become a local industry and could be sold at a cheap rate and thousands of gallons exported, no place could provide cheaper oranges for wine making than Jamaica. I think the tree grows almost equally well from sea level to 4000 feet above.—(Sgd.) E. H. CAMPBELL.

Botanic Station, Belize, Br. Honduras.

[The making of orange wine has been tried by many in the hope of utilizing the thousands of oranges that annually go to waste here, but not so far, with commercial success. Something goes wrong in the fermentation that destroys the liquor. But the island is now better equipped than before with a Government Laboratory and a Fermentation Chemist, so that more work might be done along the line of securing, if possible, a good drinkable liquor from oranges. We have cider from apples, so why not have a good beverage from oranges.—ED.]

BRANCH NOTES.

Trinity Ville (St. Thomas).—The usual monthly meeting of this Branch was held on the 2nd inst., W. A. R. Carr, President, presiding. Messrs. T. A. Edman, Henry Halliburton and A. A. Walker were enrolled as new members. A letter was read from Mr. Briscoe stating that he had reason to believe he would still be in charge of the Trinity Ville and Plans Valley districts. This was approved of. Read letter from Mr. Barclay *re* Branch Notes. The Secretary reported that he had received entry forms for the Prize Holdings Competition, which can be had from him on application. Mr. Carr brought up the matter of a long-felt want for a trained nurse for the Blue Mountain Valley district. A lengthy discussion followed, after which a resolution was passed on the motion of Mr. Carr and Mr. Hall, to be forwarded to the Parochial Board. Mr. Edman moved, seconded by Mr. Whitfield, and carried:—"That in view of the statement made by J. Briscoe, Esq., Travelling Instructor, at a meeting of the Trinity Ville Branch Agricultural Society, held on the 19th March, 1909, in reply to a question put to him *re* his reports, that the Jamaica Agricultural Society be asked to furnish this Branch from time to time with copies of the reports from the Travelling Instructor for this district." Other matters were dealt with and the meeting adjourned to first Friday in May.

A special meeting of the above Branch was also held on the 12th inst. The President explained that the meeting was convened to discuss the desirability of passing resolutions dealing with road improvement and tramway in the district. The following resolution was unanimously carried:—"That the members of the Trinity Ville Branch Agricultural Society beg to place on record their hearty appreciation of the manner

in which the Honourable Henry Cork, M.L.C. for St. Catherine, (among other things) advocated the need of a tramway from Trinity Ville to Morant Bay, at a recent session of the Legislative Council, on behalf of the Hon. J. R. Watson, M.L.C. for this parish, and that a copy of the resolution be forwarded to the honourable member." Mr. Carr said he intended to move a resolution to be sent to the Governor for granting £600 for the improvement of the road from Trinity Ville to Mt. Vernon, and £200 to effect a survey for a tramway from Trinity Ville to Morant Bay The resolution was read and seconded. Mr. Edman said he was thoroughly against such a thing, for while they should be grateful to the Government for the improvements, yet as far as his knowledge went he did not think it was a right thing to do. Some time ago the Society wrote the Governor in connection with the Mt. Vernon road, but he refused to do anything; the next step was that the matter was referred to the Parochial Board, and in their address to His Excellency at the Bath Show, among other things, this road and the tramway were mentioned. Further, said the speaker, how could a body of but a few men pledge themselves for the upkeep of the tramway. They were never asked for such a pledge. A heated discussion followed, after which the following resolution was carried, Mr. Edman alone protesting:—Whereas that a special meeting held on the 12th April, 1909, by the Trinity Ville Agricultural Society, it was moved by W. A. R. Carr, Esq., and seconded by J. A. Telfer, Esq., and carried, that a vote of thanks be tendered to His Excellency Sir Sydney Olivier, K.C.M.G., for the action of the Government in taking over from the Parochial Board, the road from the White River Bridge to Mt. Vernon and converting it into a carriage road, and the granting of a light railway to this district: Be it resolved—"That we the members of the Trinity Ville Branch of the Agricultural Society, realising that there is a considerable area of very fertile land that has been laid waste for years on the account of inadequate and difficult roads, for the conveyance of our products, and by the action of the Government in taking over from our Parochial Board that road leading from the White River bridge of this district to Mt. Vernon, also the granting of a light railway to this district, that such acts will tend to ameliorate the existing condition of things, we hereby beg to assure the Government and do pledge ourselves that in as much as in us lies, we shall use every effort to adopt improved methods on extensive scales for the advancement of our products and for the benefit of our district and parish; also for the upkeep of the railway. We further beg to thank His Excellency the Governor for the interest he has manifested regarding our district and trust that through his acts, coupled with our zeal and push, our once-neglected parish may yet rise to a state of prosperity." On the motion of Messrs. Edman and Whitfield, the following resolution was also carried:—That the members of the Trinity Ville Branch Agricultural Society, at a special meeting held on the 12th April, 1909, hereby beg to express to the Parochial Board for this parish, their thanks for the step they took in representing the matter of road improvement from Trinity Ville to Mt. Vernon, attention having been called to it by this Society, and the tramway from Trinity Ville to Morant Bay, to the Governor, with the result that they have been granted.

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Manchioneal (Portland).—The members of this Society held a meeting at the above place on Saturday, 10th instant. The principal business transacted was the voting of the sums at present in the Bank of Nova Scotia to the credit of the Society, to the Hector's River Branch for the purpose of furthering the interest of agriculture in the community.

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St. John's (St. Catherine).—A special meeting was held at Kitson Town on the 27th April, Present: Messrs. D. V. Anderson, President; T. J.

Richards, Sr., and J. H. Gonzales, Vice-presidents; and nine others. There were also 88 visitors present. After the minutes were read and confirmed, Mr. Charles Wright and the President informed the Secretary that they were not receiving their JOURNALS. The Secretary said the mistake was not his for he has in hand an acknowledgement from the general Secretary that the names of these two gentlemen were sent up to receive JOURNALS. Chief among the correspondence was a letter from the Parochial Board promising to expend £40 on the cleaning of the ponds at Aylmers and Belmont respectively, providing that the people give free labour to the extent of £40. The members and others were of opinion that the work can be easily done by cubic measurements. All were unanimous that the cleaning should be authorised at once, so that the ponds might catch water during the expected rains. It is the wish of all that no expensive headman should be put in charge of the work and that payment should be made on the spot. On the motion of Mr. S. A. Banton, seconded by Mr. E. Wilson, the following resolution was adopted:—"That the members of the St John's Branch Society and others of this neighbourhood, receive with gratitude the letter from the Parochial Board of this parish—St. Catherine; which informs us of the decision of the Board, viz., that £20 will be expended for the cleaning of the pond at Aylmers and £20 will be spent on that at Belmont, providing that free labour to the extent of £20 be given in each case, *resolved* that the Board be informed that we pledge ourselves to co-operate with the Board by giving one-half of whatever work each of us does as free labour, *e.g.*, if any one does 8/- worth of work he will be quite satisfied to receive 4/-." This resolution was moved by the Secretary after he had, in accordance with instructions from the Board, put the following questions, which were answered in the affirmative: "Do you agree to assist in cleaning the ponds at Aylmers and Belmont?" Yes. "Do you agree that you shall only be paid for one-half of whatever you do?" Yes. This was also carried unanimously on the motion of the Secretary, seconded by T. J. Richards: "Knowing that the rainfall during the month of June is generally the heaviest, during the first half of the year, as far as this district is concerned, and knowing that a sharp drought generally follows, *resolved* that the Board be respectfully asked to authorise the cleaning immediately, so that water might be got during the expected dry weather." The penny bank is making steady headway. *Much planting in our district.*—S. A. BANTON, *Secretary.*

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Comfort Hall (St. Elizabeth.)—A meeting was held on Monday, the 22nd March last, with a fairly good gathering of members in attendance. After the opening of the meeting, the Secretary informed the meeting by letter from the Instructor, Mr. J. T. Palache, that he would not be able to attend, owing to some other pre-arrangements for some other Branches on the said date. The minutes of the previous meetings were read and confirmed, when the members endorsed the request that the meetings be held on a Monday as usual. The election of members followed, and Mr. Robert Bailey, a visitor for the second time, became a member. At this stage, the President reviewed the work of the Society for the past year at some length, when the scene was changed to that of nominating and electing officers for the current year. The Secretary on behalf of the Society, accorded the President, Mr. R. A. Munroe, a hearty vote of thanks for his past zealous and untiring services, when he was nominated, and unanimously re-elected President. He then replied warmly and suitably to the call. Mr. J. W. Lalor was elected senior Vice-president. On the motion of Mr. James Williams, seconded by Mr. Allen, Mr. Uriah Hibbert was elected junior Vice-president. The President here accorded the Secretary a vote of thanks for the manner in which he had discharged his duties, under many a self-denying circumstance, and then he was unanimously re-elected Secretary. The Secretary replied, thanking the So-

seems to be like flattery, as his feeble efforts were but his duty bound to his country. Mr. T. J. Bramwell was elected Assistant Secretary. Mr. J. W. Lalor with one accord, being re-elected Treasurer, could scarcely express his deep feelings in seeing the imposed confidence placed in him in the general desire of having him as their Treasurer, in more than one instance. Other business of the Society having been gone through, the Secretary read the correspondences, when he was directed to the Superintending Medical Officer to correct north boundary of the districts now attached to that of the D. M. O. at Balaclava. Letter from the Parochial Board was discussed at length, when it was resolved to approach His Excellency on their great need of a road, through the Mahogany Grove and Breeze Hole districts, where a very large amount of taxpayers reside. All present expressed themselves as loyal subjects discouraged and downcast from their repeated cry to the Parochial Board for years past for such a great need, and nothing has been done, when their only support was that of cultivation; and for one to enter these districts it must be under risk of life in broad daylight. Letter from Mr. Barclay *re* sending representative to the half-yearly meeting, was read and discussed to this end, that the Society would do its best to be represented at next meeting. As to the extraction of essential oils, this subject was deferred until the lecturer's next visit, who promised to bring over a rinder and give instructions on the subject. Correspondence from the Post Master General was read, when the Secretary was directed to write for a reply to their request. Several members paid in their subscription, when the 26th April was fixed for a general financial meeting, thus bringing the meeting to a close.—D. S. WILLIAMS, Secretary.

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Hector's River (Portland).—The regular monthly meeting of this Branch was held in the schoolroom, Belle Castle, on the evening of the 3rd inst. There were present: Rev. W. P. Sibley, Chairman, and 19 others. Messrs. Cyril Brown and Jno. Clarke were visitors. The opening prayer was offered by Mr. M. T. Henry. The minutes of the meeting of the 6th March were read and accepted, and as a matter arising out of the minutes, Mr. F. B. Brown moved the following resolution which was seconded by Mr. T. A. Gray: "That the Secretary be directed to write to the Secretary of the parent Society suggesting that in view of the approaching show and the prize holdings competition, and as this district has had so little of the services of Mr. Cradwick or any other Instructor, that Mr. Cradwick's appointment as one of the commissioners on the foot and mouth disease in St. Mary, be cancelled so as to allow him to return to his duties here. And would further respectfully suggest that Mr. Palache, who has for a long period resided as Instructor in the same district, be appointed to substitute him. Two new members were proposed and their names accepted: Messrs. Ernest Bowen and N. O. Hewit. And a good many of the old members paid their annual subscription. The Secretary read letter from Mr. Barclay giving the conditions on which grants to Branch Society's Shows are made. A meeting of the Show Committee was fixed for Thursday, 8th inst. L. A. Wates, Esq., who should have led a discussion on cocoanut diseases, was unavoidably absent, and Mr. H. R. Miles was asked to give his long-promised lecture on the cultivation of bananas. Mr. Miles explained with great clearness all the stages in the growing of bananas—such as cleaning and preparing the land, lining—proper distance of holes; holes—correct breadth and depth; suckers—selecting and mode of planting; forking—method and time when to and when not to: trenching, pruning, cleaning and reaping. During the lecture and at its close, several questions were asked, which were satisfactorily answered by the lecturer. A very hearty vote of thanks was accorded Mr. Miles ere he took his seat. The President sought diligently, but could find no one present who would consent to give an address at the next meeting. It was proposed by Mr. L. R. McBean and seconded

by Mr. S. A. Brown, that the ladies of the Society be appointed a "social committee" with Mrs. A. H. Swift as president, and having power to add to their number, for the purpose of arranging and carrying through socials in connection with the Society. Heavy rains have been falling for the past few days.—E. JACOBS. Secretary.

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Santa Cruz Mountains (St. Elizabeth).—The meeting of this Branch on the 23rd April, 1909, was called to order at 4 p.m., by the President. On account of the very inclement weather there were only fifteen members present. The minutes of the last meetings were read and confirmed. As arising out of the minutes, it was found that the amount of prize money sent to Mr. *Robert Salmon, was incorrect. On the receipt form he is entitled to second place in the third class, valued £1 11s., whereas only 18/- was sent to him. The report on the year's work was read by the Secretary and adopted. The Treasurer's report was also read and adopted. This shows a cash balance in hand of £6 18s 6d. The report and minutes from the Myersville Branch were read. One of the gists of the meeting took place when Mrs. Ashton was asked to hand around the prizes won by the successful competitors at the last Prize Holdings Competition. After this the Society was dissolved, and the President vacated the chair, and called upon Mr. R. Lawrence to carry out the work of election of officers for the new year. The result was: Mr. S. Maxwell, re-elected Chairman, Mr. R. Lawrence, Vice-president: Rev. S. C. Ashton, re-elected Treasurer, Mr. N. E. Seal, Secretary; and Mr. A. R. Knight, Assistant Secretary. The report of the Committee appointed at last meeting to confer with the Santa Cruz Committee as to co-operation in holding a show in connection with this Branch, was read and dealt with. It was decided that Santa Cruz will forego their show this year, and co-operate with this Branch in having one big show instead of having two small ones. The show will be held on the 9th November, and this Society, through the Secretary of the Jamaica Agricultural Society, is asking for a grant from the parent Society. Each member was asked to pay an extra shilling as a beginning. This was well received. A special meeting will be held on the 21st May, to make arrangements and to select a site for the show. At this meeting 30 members have paid this year's subscription. The Secretary was instructed to open a subscription list and solicit subscriptions generally. The President suggested that something should be done with the money of the Society to benefit the members. The Secretary was ordered to have the rules of the Society printed. There being no other business, the meeting was adjourned until the 21st May, 1909.—N. E. SEAL, Secretary.

*[It was explained that Mr. Robert Salmon was bracketed with Mr. Richard Salmon, and on the judges' recommendation, 5/- was added to the amount of the prize, and an equal division made.—ED.]

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Christiana (Manchester).—The quarterly meeting of this Branch was held at the Court House on Friday, 16th April, at 1 p.m. The attendance was exceptionally small. There were present the President, Rev. Geo. McNeil, in the chair, the Vice-president, the Secretary and 12 other gentlemen. Mr. J. H. Lewison, teacher at Mizpah school, gave a lecture—dealing in the first part with the chemistry of the soil, the peculiarities of our red soil and the possibility of overcoming the disadvantages of this soil. In the second part of his lecture, Mr. Lewison very ably spoke of the cultivation of coffee. The lecturer has been a very successful cultivator for many years, and was in a position to give us the benefit of his experience. Mr. Lewison has promised to repeat the second part of his lecture later in the year, when the Branch Society will also be favoured with a lecture on the curing of coffee by Mr. Alfred Walder of Sunny Lodge.

Mr. Lewison was very heartily thanked for his lecture. The President expressed his opinion that the present system of Agricultural Instructors is not altogether satisfactory. A lecture from time to time is useful but we need more practical demonstration. He briefly outlined a scheme by which one of the young men trained at the Hope Gardens, might be placed in the district with a salary of say £60 or £70. Some five or six acres of land would be placed at his disposal, on which land he would practically demonstrate *what* can be grown and how the various crops can be best cultivated. Time did not permit of any discussion. No doubt this matter will come up again at a later date. Reference was made to the improved postal facilities in the district. Walderston, Spaldings and Christiana are now served by a "driving parcel post." The Coleyville Post Office has had a turnover of over £30 during the first six months of its existence.—F. WEISS, Secretary.

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Stewart Town (Trelawny).—The regular monthly meeting was held on Thursday evening, 29th ult. The President and the Vice-president being absent, Mr. John Stockhausen presided, 17 members being present. The minutes of last meeting were read and confirmed. Excuses for absence were received from the President and Vice-president respectively. Mr. John Stockhausen was congratulated on his election, unopposed, as a member of the Parochial Board for the No. 3 division of the parish, made vacant by the recent death of Mr. Myers of Ulster Spring. Mr. Stockhausen promised to do his best in the interests of the parish generally, and this district particularly, for the six months certain he will be a member of the Board. The acting President spoke of the success of the Minard Show, held on the 22nd inst., and emphasised the fact that these Agricultural Shows are chiefly for the benefit of the small settlers, and instanced facts to prove it. He would disabuse the minds of those people who held that these Shows are organized for the benefit of the big proprietors. It was not so. They were for the small settlers principally. They were more so protected than the "big" men. He would advise the members of this Branch to avail themselves of the opportunity of attending these Shows as might be convenient to them. It was on the agenda that an election of officers to serve this current year be made, but it was unanimously agreed that as four months had already passed, the matter be deferred, and the present officers continue to serve. On the question being asked by the Chairman, if the members felt they had derived any benefit from the Society, several expressed themselves in satisfactory terms. The samples of rat virus received from the Director of Agriculture was introduced. It will be tried and the results forwarded in due course. The Prize Holdings Competition to be held in this parish this year was discussed, and five persons at present have signified their intention of entering. The prospective Ulster Spring Show (June 3) was considered, and the Secretary was instructed to write to the Secretary of the Ulster Spring Branch to enquire whether the entrance fee of threepence for minor products, is for the bulk that an exhibitor may take, or is it intended for each separate class of exhibit. The meeting was of opinion if the latter is intended, it would press hardly on exhibitors of minor products. The subject of a road through Hopewell to the Dornock River for the residents of the districts of Biddeford, Jackson Hill, Jackson Town, and Sawyers was discussed. It was stated that during this present drought, the people of the districts mentioned were experiencing much hardship in obtaining water. The following resolution was therefore passed: resolved "That this meeting would respectfully ask the President of the Branch, the Hon. and Rev. W. M. Webb, M.L.C., also a member of the Parochial Board of Trelawny, and Mr. John Stockhausen, who has been lately nominated and elected a member, to represent to the Board the plight the people of Sawyers, Jackson Hill, Jackson Town and other surrounding districts are in for the want of water, and to urge on the Board the necessity of acquiring a right of way to the river." At

the last meeting, Mr. George Hill in bringing the subject before the meeting, had stated that a poor man had been charged 8/- because his two children had trespassed on Barnstaple Pen to take a little water from the pond. This statement along with the report of the meeting, having been published in the newspapers, was contradicted by the overseer of Barnstaple Pen as positively untrue ; for as a matter of fact the people are allowed to get water at Barnstaple. The statement being recalled at this meeting, Mr. Hill explained that it was substantially correct, only that he had been misinformed at the time as to the place. It should have been Sportsman's Hall, a neighbouring pen, and not Barnstaple. The contradiction has been forwarded to be published in the *Gleaner*. It was agreed that the Rules of the Branch be printed for distribution among the members. Mr. John Sieveright, who was present, applied for membership. His application was received. The items on the agenda being disposed of, the meeting closed with the singing of the Doxology and the Benediction.—JOSIAH JOHNSON. Secretary.

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Ulster Spring (Trelawny).—The monthly meeting was held on the 10th February, A. B. South, Esq., presiding. There were 36 members present. Mr. Gill reported the death of the goat. He got away from his keeper and was found in a very poor condition. The *Gleaner's* offer to print 300 prize lists for £4 was accepted, and the meeting decided to distribute them freely. Read letter from W. Levy, Esq., *re* Brown's Town Show. Meeting decided to send exhibits and make the show widely known. Read letter from the Christiana Branch stating that they are willing to co-operate if prize lists reach them by Feby. 12th. Secretary was instructed to reply pointing out that date of show is changed to June 3. Read letter from Parochial Board declining to grant the Society's request for a grant of £15 to repair roads Nos. 118 and 120, and suggesting that allotments may be used for the purpose. Secretary was instructed to ask the Board to make a substantial increase to the allotments. Mr. South read an excellent paper on manuring, and was accorded a very hearty vote of thanks. Mr. Shaw gave a graphic description of the effects of manure on a breadfruit tree, and Mr. Spencer told of the increase he obtained by applying manure to his potato and yam fields. The following Committee was appointed to select extracts from the JOURNALS and other sources for use at meetings : Mrs. Virtue, Messrs. Helwig, Reid, Spencer, and Ferguson. The Secretary was instructed to ask Mr. Barclay for the services of Mr. Arnett for May.

Monthly meeting March 11th, Rev. E. G. Douglas presiding. Mr. South spoke on the advisability of sending exhibits to the Brown's Town Show, and the members present promised to give all the support they can, especially as exhibits would be taken down free in Mr. South's cart. Mr. South referred to the death of Mr. Myers, who was Treasurer of the Society, and moved an adjournment of 15 minutes. The President seconded and expressed his sorrow and the great loss the Society suffered in the death of its valued Treasurer. On the motion of the Secretary seconded by Mr. South, it was decided to send a letter of condolence to the widow and children of the deceased. Decided to have a picnic on Easter Monday, in aid of the Show, and to print 25 placards. Mr. William Christie Alps made a fine speech surveying the work of the Society, emphasising the point that Instructors should not be imported, but a selection should be made among local men with the necessary qualifications. Mr. Ezekiel Smith referred to the pollution of the water at the dam, and suggested that this may be due to the burial of a human body near the bed of the stream. The President decided to interview Mr. Linton, Inspector of Nuisances, and bring up the matter again at the next meeting. A futile attempt was made to appoint a successor to Mr. Myers, the late Treasurer. The matter will be brought up at the next meeting.—G. W. MILLER, Sec-